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The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 25

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KATSUO WADA,
MIYUKI ONISHI, JUNICHIRO NAKAYAMA,
TOMOYUKI MIYAKE, TAKASHI IWAKI,
and TAKESHI YAMAGUCHI

Appeal No. 97-2421
Application 08/202,411¹

HEARD: August 6, 1997

Before HAIRSTON, BARRETT, and FLEMING, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

¹ Application for patent filed February 24, 1994, entitled "Information Processing Apparatus Having A Floating-Type Head," which is a division of Application 07/840,905, filed February 25, 1992, now U.S. Patent 5,313,445, issued May 17, 1994.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 17-19 and 22-25. Claims 1-16 have been cancelled. Claims 20 and 21 have been withdrawn pursuant to a restriction requirement.

The invention is directed to an apparatus for raising and lowering a floating-type magnetic head as exemplified by claims 17 and 22 reproduced below.

17. An information processing apparatus comprising:

a rotative driving means for rotating a disc-shaped recording medium;

a floating-type head at least for reproducing information recorded from a recording medium or for recording information on the recording medium, the floating-type head having a slider which is floated by an air flow that is directed near the surface of the rotating disc-shaped recording medium;

a suspension, made of an elastic member, for supporting the floating-type head;

a raising and lowering means for moving the floating-type head away from the disc-shaped recording medium when the rotation of the disc-shaped recording medium is stopped and for allowing the floating-type head to approach a floating height above the disc-shaped recording medium when the disc-shaped recording medium is rotated; and

a control means for controlling the raising and lowering means in such a manner that the lowering speed at which the floating-type head is brought to the floating height above the disc-shaped recording medium is kept slower than a raising speed at which the floating-type head is moved away from the disc-shaped recording medium.

22. An information processing apparatus comprising:

a rotative driving means for rotating a disc-shaped recording medium;

a floating-type head at least for reproducing information recorded from a recording medium or for recording information on the recording medium, the floating-type head having

a slider which is floated by an air flow that is directed near the surface of the rotating disc-shaped recording medium;

a suspension, made of an elastic member, for supporting the floating-type head;

a raising and lowering means for moving the floating-type head away from the disc-shaped recording medium when the rotation of the disc-shaped recording medium is stopped and for allowing the floating-type head to approach a floating height above the disc-shaped recording medium when the disc-shaped recording medium is rotated, said raising and lowering means including a lever having an L-shape, one portion of which extends and remains substantially parallel to the rotating disc-shaped recording medium, the lever pivoting around a support shaft so as to raise and lower the suspension, wherein the support shaft supports the lever; and

a control means for controlling the raising and lowering means so that the floating-type head is controllably brought to the floating height above the disc-shaped recording medium and is moved away from the disc-shaped recording medium.

The examiner relies on the following references:

Carteau et al. (Carteau) 4,786,994 November 22, 1988
Kitagawa Japanese Kokai 4-42479 February 13, 1992²

Carteau discloses a drive mechanism for lowering and raising a transducer head of a magnetic disk memory. Carteau discloses that the head should be lowered from an idle position height H to the hovering height h at a velocity between a pair of predetermined values because if the velocity is excessive there is a risk of a head crash, whereas if the velocity is too slow the head is likely to oscillate which may also cause a head crash (column 4, lines 7-17). Carteau's desired lowering speed is between 8 and 16 mm/sec. (column 4, lines 11-12); appellants' desired lowering speed is between

² A translation has been prepared for the U.S. Patent and Trademark Office and a copy accompanies this decision.

5 and 15 mm/sec. (specification, page 50). Carteau discloses using a cam CAM and a cam follower P to raise and lower the head T. The cam follower P is part of a spring plate LRS mounted on supporting arm BS. Under the influence of cam follower P, the spring plate LRS exerts/releases a force on wire F which in turn exerts/releases a tensile force on loading plate LAM to adjust the height of head T above the plane of the disk DISC. The cam has three sections to divide the loading (unlocking and lowering the head to the disk) and unloading (raising the head from the disk to the locked position) operations into three phases. Two breakpoints, A and B, divide the three sections and sudden changes in acceleration of system SCT occur when pin P reaches the break points (column 12, lines 28-30). If the velocity of the moving arm is less than a predetermined velocity at the second breakpoint B, there is a likelihood that the cam follower will travel backward away from the second breakpoint, while if the velocity is greater than a predetermined value, the arm is likely to accelerate and cause the head to crash onto the disk (e.g., column 3, line 63 to column 4, line 7). Carteau controls the motor current so that as the cam follower P passes the breakpoint B the arm is driven to a zero velocity and then is driven to a predetermined velocity without substantial overshoot (column 4, lines 36-62). The motor current waveforms during loading (lowering) are shown in figures 5A to 5C.

Kitagawa discloses a device to load and unload a magnetic head slider. Head sliders 3a and 3b are installed to actuator arms 6a and 6b via suspensions 4a and 4b on both surfaces of the magnetic disk 1. Head lifters 7a and 7b are attached to support stand 11 via plate springs 10a and 10b so that head lift arms 8a and 8b which are attached to 7a and 7b are installed between the

suspensions 4a and 4b and the magnetic disk 1. A cam 12 is installed between shoulder parts 9a and 9b of the head lifters 7a and 7b and is driven by rotation driving part 13 (e.g., a stepper motor). The cam 12 can be rotated to spread the head lifters 7a and 7b apart which causes head lift arms 8a and 8b to lift the suspensions 4a and 4b so that the magnetic head sliders 3a and 3b are held off the magnetic disk 1. The cam 12 can be rotated so the head lifters 7a and 7b come together which causes the head lift arms 8a and 8b to lower the suspensions 4a and 4b allowing the magnetic head sliders 4a and 4b to float over the disk 1.

Claims 17-19 and 23 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Carteau.

Claims 22 and 24 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Kitagawa.³

Claim 25 stands rejected under 35 U.S.C. § 103 as being unpatentable over Carteau and Kitagawa.⁴

OPINION

³ Since Kitagawa was published February 13, 1992, less than two weeks before the filing date of parent Application 07/840,905 on February 25, 1992, and since the present application is a division of that application, Kitagawa cannot be § 102(b) prior art. We treat the rejection to be under § 102(a). Appellants claim the priority benefit under 35 U.S.C. § 119 of Japanese applications having an earlier filing date than Kitagawa. However, since no translations have been filed we do not consider the priority documents to overcome Kitagawa. See 35 U.S.C. § 119(b) ("The Commissioner may require a translation of the papers filed if not in the English language and such other information as he deems necessary."); Manual of Patent Examining Procedure § 201.15 (6th ed., Rev. 2 1996).

⁴ The first paragraph of § 103 was redesignated as § 103(a) as of November 1, 1995. Pub. L. 104-41, sec. 1, 109 Stat. 351 (Nov. 1, 1995). Accordingly, the rejection should refer to § 103(a).

We reverse but enter a new ground of rejection as to claims 17 and 18 pursuant to 37 CFR § 1.196(b).

Claims 17-19 and 23

"Anticipation is established only when a single prior art reference discloses, expressly or under principles of inherency, each and every element of a claimed invention." RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984).

The limitation at issue in claim 17 is the following: "a control means for controlling the raising and lowering means in such a manner that the lowering speed at which the floating type head is brought to the floating height above the disc-shaped medium is kept slower than a raising speed at which the floating-type head is moved away from the disc-shaped recording medium." Appellants argue that "[i]n the device of Carteau et al, there is no teaching or suggestion for controlling the raising and lowering means so that the floating-type head is controllably brought to the floating height above the disc-shaped recording medium at a slower speed than it is moved away from the disc-shaped recording medium, as claimed in claim 17.

The examiner responds that (Examiner's Answer, page 4):

As can be seen from figure 5C the motor current, which directly determines the speed at which the head descends toward the medium is reduced upon approach of the medium. If as appellant states that the raising process is the reverse of the lowering process, then it makes senses [sic] that the head would be moved away from the medium in an increasing speed due to current applied as depicted in figure 5c. The fact that these operations (raising and lowering) are reverse operations and are controlled by a motor current that varies results in head speeds that satisfy the claimed invention.

This is the first time the examiner has explained why he considers the lowering speed to be slower than the raising speed in Carteau and thus the reasoning is not addressed by appellants.

Carteau does not describe the unloading (retracting) operation except to say that the cam follower sequentially follows along the cam profile CB, BA, AA' in a direction reverse to the loading (lowering) operation (e.g., column 3, lines 21-28; column 8, lines 11-17). Carteau discusses the speed of loading, but not the speed of unloading or the relative speeds of loading and unloading. While it seems logical that unloading could be carried out faster than loading since there is no danger of a head crash, and since it is unnecessary to slow the cam follower P at the breakpoints, it is impermissible to make such guesses in an anticipation rejection. "Inherency, however, may not be established by probabilities or possibilities." In re Oelrich, 666 F.2d 578, 581, 212 USPQ 323, 326 (CCPA 1981). Something is not inherent even when it may be only one of a small number of alternatives. It is improper to resort to speculation or unfounded assumptions to supply deficiencies in the factual basis for a rejection. In re Warner, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967). We have considered the examiner's arguments regarding figures 5A-5C, but find these figures directed solely to the loading operation. We find nothing in Carteau which reasonably suggests that the raising operation is inherently faster than the lowering operation. Accordingly, the anticipation rejection of claim 17 and dependent claims 18-19 and 23 is reversed. The examiner has not presented a backup obviousness rejection of claim 17.

Appellants argue in the brief that the "control means" and the "raising and lowering means" are in means-plus-function language under 35 U.S.C. § 112, sixth paragraph, and Carteau "does not

disclose or suggest the structure described in the present application or a structural equivalent thereof" (Brief, page 10). At oral hearing counsel for appellants admitted that structure equivalent to raising and lowering means in claim 17 is not limited to levers. We agree, and find that the structure in Carteau is the equivalent of the claimed "raising and lowering means." Appellants' figure 1 shows a raising and lowering means as a block 16 and therefore it can be assumed that appellants intend the means to broadly cover any means for performing the function, even though appellants provide specific embodiments showing levers. If appellants had intended to limit the raising and lowering means to a lever, they could have so limited claim 17 as in claim 22. The tensioned wire F in Carteau lifts/lowers the head in essentially the same way as a lever except that it pulls instead of pushes to lift and so is considered an equivalent under § 112, sixth paragraph. Carteau does not disclose the function of lowering the head at a slower speed than a raising speed and so the structure does not meet the "control means" limitation of claim 17.

Claims 22 and 24

The limitation at issue in claim 22 is the following: "said raising and lowering means including a lever having an L-shape, one portion of which extends and remains substantially parallel to the rotating disc-shaped recording medium, the lever pivoting around a support shaft so as to raise and lower the suspension, wherein the support shaft supports the lever." Appellants state that Kitagawa discloses L-shaped head lift arms 8a and 8b which are pushed apart by turning a cam 12 to raise and lower the heads 3a and 3b. Appellants argue that "[t]he lift arms 8a and 8b of Kitagawa are not lever arms and they do not pivot around a support shaft, as claimed herein" (Brief, page 11). Appellants rely on the definitions of "lever" and "pivot" (Brief, page 12).

The examiner responds that (Examiner's Answer, page 6):

[A]rms (8a,8b) are directly connected to shaft (11) via springs (10a,10b). Since these arms are fixed at one end, the end connected to shaft (11), any movement due to cam (12) must cause these arms to "pivot" around this connection. Contrary to appellant [sic] statement; arms (8a,8b), better described as arms (7a,7b), are "rigid" and due [sic] apply forces as required by the definition of a lever and also pivot about shaft (11) as discussed above.

We agree with the examiner that head lifters 7a and 7b together with the attached head lift arms 8a and 8b are L-shaped levers consistent with the definition of "lever." Appellants' define "lever" as "a rigid bar used to exert a pressure or sustain a weight at one point of its length by the application of a force at a second and turning at a third on a fulcrum" from Webster's New Collegiate Dictionary (G.&C. Merriam Co. 1981). Piece 7a and 8a exerts a pressure on suspension 4a by application of force from cam 12 on shoulder 9a and turns about where the spring 10a fastens to support stand 11. A "fulcrum" is "the support about which a lever turns," Webster's New Collegiate

Dictionary (G.&C. Merriam Co. 1977), and does not have to be a shaft but can a point about which the lever bends. In addition, a "lever" is also defined as "a bar used for prying or dislodging something," id. (definition 1a), and the L-shaped piece 7a, 8a in Kitagawa is manifestly a lever under this broader definition.

We disagree with the examiner's finding that head lifter 7a (part of the lever) fixed to support stand 11 via plate spring 10a is a "lever pivoting around a support shaft." The spring 10a does not "pivot" under the definition of "pivot" as "to turn on or as if on a pivot" because "turn" requires movement around an axis or a center, i.e., rotation not bending. The claim requires "pivoting around a support shaft" which requires rotation around the support shaft, not bending. The "lever pivoting around a support shaft" is not in means-plus-function format and so there is no question about the structure in Kitagawa anticipating because it is an equivalent. Because we find that Kitagawa does not disclose a "lever pivoting around a support shaft," we reverse the rejection of claims 22 and 24.

Claim 25

Claim 25 depends on claim 19, which depends on claim 18, which depends on claim 17. The examiner adds Kitagawa to Carteau for the teaching of an L-shaped lever. Because claim 25 incorporates the limitations of claim 17, and because the rejection of claim 17 has been reversed, the rejection of claim 25 is reversed. Further, Kitagawa does not disclose an "L-shaped lever that pivots around a support shaft," as recited in claim 25, for the reasons discussed with respect to claim 22 and the examiner has not provided any reasons why it would have been obvious to modify Kitagawa for

this feature. Still further, we do not understand how the examiner proposes to modify Carteau to use an L-shaped lever since Carteau uses a wire to raise and lower the head, not a lever that is raised and lowered while contacting the suspension as recited in claim 19. For all these reasons the rejection of claim 25 is reversed.

NEW GROUND OF REJECTION PURSUANT TO 37 CFR § 1.196(b)

Claims 17 and 18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Carteau. Carteau discloses that the head should be lowered from an idle position height H to the hovering height h at a velocity between a pair of predetermined values because if the velocity is excessive there is a risk of a head crash, whereas if the velocity is too slow the head is likely to oscillate which may also cause a head crash (column 4, lines 7-17). Carteau's desired lowering speed is between 8 and 16 mm/sec. (column 4, lines 11-12); appellants' desired lowering speed is between 5 and 15 mm/sec. (specification, page 50). The difference between Carteau and the subject matter of claim 17 is that Carteau does not discuss the speed of raising or the relative speed of raising versus lowering. It would have been obvious to one of ordinary skill in the art to raise the head in Carteau at a faster speed than the head is lowered because the artisan would have been motivated to use the fastest raising and lowering speeds possible (without a crash) to minimize the access time and because raising the head does not have the same restrictions on speed as lowering the head because the head is moving away from the disk. The maximum speed during lowering is limited by the need to gradually establish a stable air cushion and to prevent the momentum of the head from causing it to crash onto the disk, two conditions which do not exist during raising. Consider the fairly old example of cuing

mechanisms used on phonograph turntables to raise and lower the arm to move the stylus between specific points. There was a damping device to lower the arm and stylus gradually onto the record, whereas the device for raising the arm was undamped and very quick. This example illustrates that it would have been obvious to raise a transducer head more quickly than lowering it.

We have considered appellants' raising and lowering data gathered under various conditions (specification, pages 45-52), but see nothing in the discussion that would indicate there is anything unexpected in using a raising speed greater than a lowering speed. The conditions (e.g., P_{12} and P_{13}) are not described in the claims.

With respect to claim 18, the wire F in Carteau is considered an "elastic member . . . for applying a force" because it can be deformed. This is consistent with appellants use of the term "elastically deformed" to describe a bending of the suspension 26 (specification, page 36).

CONCLUSION

The rejections of claims 17-19 and 22-25 are reversed.

A new ground of rejection is entered as to claim 17 and 18 pursuant to 37 CFR § 1.196(b).

Any request for reconsideration or modification of this decision by the Board of Patent Appeals and Interferences based upon the same record must be filed within one month from the date of the decision. 37 CFR § 1.197. Should appellants elect to have further prosecution before the examiner in response to the new rejection under 37 CFR § 1.196(b) by way of amendment or showing of facts, or both, not previously of record, a shortened statutory period for making such response is hereby set to expire two months from the date of this decision.

NOTE: This is not a final decision for the purpose of judicial review because it includes a new ground of rejection pursuant to 37 CFR § 1.196(b) ("A new rejection shall not be considered final for the purpose of judicial review.").

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

REVERSED) § 1.196(b)

KENNETH W. HAIRSTON)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
LEE E. BARRETT)	APPEALS
Administrative Patent Judge)	
AND)	INTERFERENCES
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Appeal No. 97-2421
Application 08/202,411

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